

Preliminary High-Level Evaluation Tool
for Supporting Initial Prioritization of Ozone Reduction Measures

Draft: Not for Distribution

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Measure type: Land Use

Measure name and description: Tools for reducing VMT and associated air emissions by increasing development density, improving destination accessibility, enhancing connectivity to transit, reducing distance to transit, and advancing urban design features that make alternative transportation options more attractive.

These tools implement a selection of broad land use strategies designed to achieve outcomes consistent with those motivating the RAQC's work. They include:

- Increasing cooperative integrated planning for regional growth, transportation, and land use;
- Increasing land use development densities by targeting growth to urban centers and creating/enhancing urban growth boundaries
- Building Transit Oriented Communities;
- Promoting neighborhood design and connectivity by employing innovative development strategies;
- Enhancing first/last mile transit connections and increasing of urban circulators.

RAQC evaluated specific land use tools for reducing VMT and associated air emissions and the following tools will be further analyzed in 2011 as part of the Ozone SIP planning¹:

- Urban Growth Boundaries
- Regional Transportation Plan Selection Criteria
- Corridor Planning
- Local Land Use Tools & Policies to improve air quality
- Transit-Oriented Development
- Financial/Economic Tools & Policies to improve air quality
- Community Land Trusts
- Purchase/Transfer of Development Rights

Many studies explore the relationship between the built environment and travel behavior. The built environment has a profound impact on vehicle miles traveled and air quality. There are key influences affecting the nature of built environment which the subcommittee explored; those influences were identified as "desired results" of associated land use strategies and are often referred to as the "5 Ds". They include the following and in one way or another influence travel behavior and air quality:

¹ Note these "tools" represent a condensation of a longer list of "land use " measures for reducing VMT and air quality. The list was condensed to identify more clearly the key implementation differences for purposes of SIP planning. They can be used in conjunction with each other or independently, but require extensive local, regional and state-level collaboration among all interested parties; public and private.

- **Density** - Density refers to the number of units per acre, by increasing density, more units (housing, commercial, retail, etc) are located in a particular area than what might occur.
- **Diversity (Mix of Uses)** - Mix of uses refers to the mix of uses in one area. This includes retail, office, commercial, housing, and public spaces. This type of development pattern encourages walkability, livability, reduced trips, and community. (ex: jobs to housing balance).
- **Destination Accessibility** - Ease or convenience of trip destinations from point of origin, often measured at the zonal level in terms of distance from the central business district or other major centers.
- **Distance to Transit** - Ease of access to transit from home or work (ex: bus or rail stops)
- **Design (Connectivity and Access)** - Neighborhood layout and street characteristics, particularly connectivity, presence of sidewalks, and other design features (ex: shade, scenery, presence of attractive homes) that enhance the pedestrian-bicycle friendliness of an area.

These “5-D’s” often work synergistically (e.g., higher density with mixed use development has more affect on travel behavior than singularly). Additionally, their resulting air quality benefits may be additive, for example one can enjoy differentiated air quality benefits from each desired outcome, which can be added together to calculate total air quality benefit). More detail on the “5 D’s” can be found in **Table 1**.

Table 2 presents how each of the tools evaluated by the RAQC might be used in ozone SIP planning, including: how a particular tool affects one or more of the of the “5 Ds”, how the tool might be used in the SIP, at what government/community level the tool would need to be applied to be successful and what future analysis is need to fully evaluate the tool for consideration in developing the ozone SIP.

Preliminary sense of anticipated air quality benefits (e.g. NOx/VOC reductions? Potential reduction amount?):

Air quality benefits would come primarily from reduced VMT. However, ancillary air quality benefits may be seen from reduced trips, fewer start-ups, evaporative emissions, etc. Current research has established a clear link between the built environment and travel demand. With this linkage comes a variety of broadly estimated air quality benefit estimates, as noted in **Table 1**. You will also note that some estimates are additive. For example, a development may see a 2% reduction in VMT due to density, a 2% reduction due to increased access to transit and a 2% reduction due distance to downtown, ultimately resulting in a 6% reduction in VMT due to the combined influence of the built environment.

Preliminary sense of anticipated costs and economic impacts:

At this stage of evaluation, costs are extremely difficult to predict. However we can generally assume the following:

- Cost increases from additional transportation infrastructure to accommodate increased growth in key areas and additional transportation options (ex: increased roadway capacity, transit service, etc).

- Cost savings from reduced local government operating costs due to reduced utility/infrastructure needs, as a result of more compact development (e.g., cost/household decreases for sewer/water/transportation infrastructure such as construction and maintenance of roads, sewer, etc).
- Cost savings from reduced household transportation costs as distances to work, shopping, school, etc. are decreased, households have the option of owning fewer cars and more alternative transportation options become available.

Additional technical analysis needed to refine benefits/costs estimates:

Additional analytical needs are significant and vary from tool to tool. Table 2 identifies short term analytical needs for purposes of initial SIP measure and baseline strategy decisions that will need to be made by the RAQC in 2011/2012. Ultimately, the following analysis will be needed for those tools the make the initial cut:

- Additional regional and micro scale analysis of built environment’s influence on VMT.
- Modeling and economic evaluation of benefits/costs, urban form and associated infrastructure demand changes.
- Air quality benefits of VMT reductions need to be estimated using assumptions from the above analysis and EPA’s new emissions model (MOVES).
- Additional photochemical air quality modeling required to determine impact of lower emissions on ambient ozone levels.

Implementation feasibility (e.g. Who has authority? Who needs it? Who implements the measure?):

Implementation of land use tools to reduce VMT and air emissions takes immense cooperation at the locally and regionally, as well as at the state level. Also, since many participants drive land development processes, these efforts require many public and private sector entities to support and advance this measure. Authority for doing so lies with many: local governments for land use planning, developers aided by market forces and incentives to build using the land use code designed to encourage a built environment build-out that is reflective of higher densities, increased mixed use, and greater connectivity/accessibility; DRCOG articulating long-range region growth policy. Furthermore, since the nonattainment area will include areas covered by the North Front Range Metropolitan Planning Organization (NFRMPO), and possibly Pikes Peak Air Council of Governments (PPACG), these regional governing bodies and municipalities and business within them will also be called upon to participate in such efforts.

While DRCOG and other regional planning agencies are currently considering prioritizing project selection to urban centers, employment and population location is dependent on development, land use regulations and market forces. The State of Colorado does not mandate land use planning at the statewide level, and there is no current statutory authority granted to DRCOG (or any regional entity) for development review.

A comprehensive approach to land use planning in Colorado would have to occur via state legislation for this measure to offer tangible air quality benefits in the foreseeable future.

Table 2 provides an initial sense of the level at which each of these tools would have to be implemented in order to be considered for SIP purposes.

Demonstrated ability to take "SIP Credit" for the measure:

Air quality benefits from land use activities could be included in SIP planning in two ways:

1. As part of air quality baseline modeling; for things that already being done and that can continue
2. As a specific quantifiable control strategy identified in the SIP, that is either mandatory or voluntary (if voluntary, the measure must qualify under EPA's Voluntary Mobile Source Emission Reduction Policy).

Regardless of how they are incorporated, the land use assumptions made in a SIP must be based on the best available information and must realistically predict its future impact on VMT and air quality within the nonattainment area (based on state, regional, and local policies and plans). EPA guidance recommends the inclusion of specific land use policy only if:

- The policy has already been adopted by an appropriate jurisdiction, or
- The policy is planned and there is an enforcing mechanism to ensure it will happen, and
- The policy's effects have not been account for elsewhere (no double counting)²

Land use policies/projects and any air quality benefits associated with such a strategies would most likely be considered in the air quality baseline modeling, conducted by DRCOG. (Need to explain why). The results of which are then fed into the travel demand model. These steps provide the emission estimates for motor vehicles.

Land use policies/projects can be included as a control measure if they are quantifiable, surplus, enforceable, permanent, and adequately supported.³

Defined elements and associated emission reductions of this strategy could also be included as a Voluntary Mobile Source Emission Reduction (VMEP) policy. Such strategies must be quantifiable, surplus, permanent and adequately supported. VMEP measures are limited to 3% of the total emission reductions needed to reach attainment. If a VMEP strategy does not meet target reductions, the responsibility for those reductions falls with the State.⁴ VMEP strategies cannot "double-count" emissions benefits included in baseline modeling.

² EPA. 2001. *EPA Guidance: Improving Air Quality Through Land Use Activities*. <http://www.epa.gov/oms/stateresources/policy/transp/landuse/r01001.pdf>

³ EPA. 2001. *EPA Guidance: Improving Air Quality Through Land Use Activities*. <http://www.epa.gov/oms/stateresources/policy/transp/landuse/r01001.pdf>

⁴ EPA. 2001. *EPA Guidance: Improving Air Quality Through Land Use Activities*. <http://www.epa.gov/oms/stateresources/policy/transp/landuse/r01001.pdf>

Likelihood that measure could be in place in time for SIP inclusion (approx 2015); and, if later, how much later (e.g. 2 years? 10 years, etc?):

Since land use tools for reducing VMT and air emissions take a long time to take effect, land use assumptions beyond current practice are unlikely for inclusion in the upcoming SIP. However, policies and programs implementing DRCOG's MetroVision goals could be in place and have measurable effect in longer-term air quality planning.

Preliminary Assessment of Co-benefits (e.g. other air quality, economic, quality of life, transportation etc):

- GHG emission benefits through reduced VMT, congestion and fuel usage.
- Increased transit ridership.
- Reduced demand for water and wastewater service, and preservation of developable land; the clustering of development (preserving more open space).⁵
- Increased quality of life as individuals spend less time in cars/congestion, have more transportation options available.
- Increased disposable income at the household level (all else remaining equal) from possible reduction in household auto fleet.
- More resilient building mix. Buildings can interchange uses more easily; there is greater diversity in housing options and buildings/uses can adapt to changing economic conditions and community needs more easily.
- Reduced water use. More compact development has lower per capita water consumption than less compact development.

Other Considerations/Comments (e.g. Employed elsewhere, particular challenges/opportunities etc?):

- The Sacramento Area Council of Governments (SAGOG) included emission reductions from a variety of Transportation Control Measures (through 2018 planning horizon) that support density and development in urban centers (0.1 TPD VOC, 0.9 TPD NOx), but did not take emission reduction credit in the SIP.⁶
- The Dallas-Fort Worth SIP listed sustainable development practices as a Voluntary Mobile Emission Reduction Program, but did not take emission credit in the SIP.⁷
- DRCOG is considering increases in density and promoting development in urban centers in its 2035 Metro Vision Plan and Regional Transportation Plan update.
- DRCOG has included support for land use strategies that increase density and growth in urban centers in its 2012 – 2017 Transportation Improvement Program.
- Atlanta's Atlantic Station redevelopment (which included a mixed – use infill/redevelopment near downtown Atlanta) utilized programs such as a Community Land Trust, private

⁵ DRCOG. 2007. "Metro Vision 2035 Update Scenario Descriptions"

⁶ Sacramento Metropolitan Air Quality Management District. 2008. *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan*.

<http://www.arb.ca.gov/planning/sip/planarea/sacsip/sacplanozone2009.pdf>

⁷ "Approval and Promulgation of Air Quality Implementation Plans; Texas; Dallas-Fort Worth Voluntary Mobile Emission Reduction Program." 70 Federal Register 165 (26 August 2005), pp. 50209 – 50210.

contributions, Tax Incremental Financing (TIF), in addition to federal, state, and local dollars to incentivize development and was included as a TCM in the SIP for conformity purposes.⁸

- CDOT is studying ways to better integrate land use and transportation planning by developing scenario planning tools to help local communities understand the impacts of different land development scenarios on transportation infrastructure costs. The tools can help communities identify ways in which to develop that promote a sense of community and quality of life and provides for connectivity among land uses as well as multiple transportation modes. Designs that focus on innovative neighborhood design create places where residents can live, work and play and do so by walking, biking or transit. This will reduce vehicle miles traveled and provide many benefits such as lower GHG emissions, lower transportation costs, less congestion, and better health. In such a community, more travel modes can also be accommodated.

⁸ Leary, Brian. 2010. "Improving Air Quality, Economic Well-being and Community Design at the Project Level: A Developer's Perspective." http://raqc.org/postfiles/board_meetings/2010/june04/Leary1.pdf

Table 1 – Land Use Objectives for Reducing VMT and Enhancing Air Quality

	Land Use Objectives (the 5 Ds) ⁹				
	<u>Density</u>	<u>Mix of Uses or Diversity</u>	<u>Destination Accessibility</u>	<u>Distance to Transit</u>	<u>Connectivity and Access Design</u>
Measurement	People, employees, floor area ratio (FAR) or housing units per acre	Number and types of uses within a given area	Distance from home to central business district or other major centers	Whether or not home or work is within ¼ to ½ mile of the trip origin/destination.	Proximity to transportation services (transit, bike/ped, roads). Specifically, block size, intersection density, and link-to-node ratio.
Emission Reduction Potential	VMT reductions may be seen between 5 – 12% as residential densities are doubled (on local and regional scale). ¹⁰	VMT reductions may be seen around 5% as land use mix is doubled. ¹¹	VMT decrease of 1.2% from 2005 levels in 2035. ¹² (Modeled by Urban centers capturing 50% of household growth and 75% of employment growth between 2005 and 2035).	A 10% increase in transit supply variables results in a 0.7% decrease in VMT. ¹³	VMT reductions vary greatly but as much as 20% - 26% as accessibility is doubled. ^{14 15 16}

⁹ The 5 Ds were used in the recent study *Driving and the Built Environment*. It is important to note that many of these strategies are complementary and the VMT reduction potential is additive. It is also to note that not all VMT reductions are created equal. Reducing VMT could be achieved from affecting each of these factors: (a) reducing trip lengths, (b) reducing trip frequencies, (c) reducing travel by automobile (mode shift), and (d) reducing the number of cars per household.

¹⁰ Transportation Research Board. 2009. *Driving and the Built Environment*. National Academies of Science, Washington, D.C.

¹¹ Transportation Research Board. 2009. *Driving and the Built Environment*. National Academies of Science, Washington, D.C.

¹² DRCOG. 2010. "Incorporating Sustainability into Metro Vision" Memo prepared for Metro Vision Issues Committee (dated February 3, 2010).

¹³ Transportation Research Board. 2009. *Driving and the Built Environment*. National Academies of Science, Washington, D.C.

¹⁴ Transportation Research Board. 2009. *Driving and the Built Environment*. National Academies of Science, Washington, D.C.

¹⁵ LUTAQH. 2005. *A Study of Land Use, Transportation, Air Quality and Health in King County, WA*. Prepared by Lawrence Frank & Co., et al for King County, WA.

¹⁶ *These VMT reduction numbers may be influenced by other exogenous variables; localized modeling is needed to ascertain the influence of connectivity and distance to transit on VMT.*

Table 2 - Evaluation of Land Use Tools for Ozone SIP Planning

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Strategies Requiring Further Analysis in 2011					
Urban Growth Boundary	UGB's are established to manage growth within a geographic area. They can increase density of in urban development. (ex: Oregon, Washington, and Tennessee)	Densification of development	Urbanized area	Voluntary or mandatory	YES. Need analysis of how existing UGB's along Front Range have managed growth (eg: Boulder, Weld Counties, DRCOG). Discussed during 10/26 Subcommittee Mtng
Regional Transportation Plan Selection Criteria	Regional transportation planning must be conducted by all recipients of USDOT funds. (ex: DRCOG's Regional Transportation Plan and Transportation Improvement Program) and can affect land use development patterns. DRCOG uses scoring criteria in the transportation project selection process to incentivize growth in urban centers. For example, a project will get x points if it is in a designated urban center, has multi-modal access, or other criteria, depending on the funding pool.	Densification of development in urban areas, improved destination accessibility, reduced distance to transit, and design features that make alternative transportation options more attractive/viable.	Urbanized area	Incentive	YES. Need to evaluate how RTP and TIP scoring criteria changes could be strengthened to effectively reduce VMT and associated air emissions. Discussed during 10/26 Subcommittee Mtng

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Corridor Planning	Corridor plans are generally completed by localities, MPOs, or the state DOT to plan for multi-modal improvements along a designated corridor. Plans may include access, frontage, design elements, vegetation, lighting). The plan for a specific corridor affects the subsequent investment along that corridor and can affect demand whether people choose to drive or use alternative transportation. (ex:CDOT's I-70 Mountain Corridor Plan) Collaborative transit corridor planning is underway along RTD's western corridor in coordination with FasTracks.	Improved destination accessibility, reduced distance to transit, and design features that make alternative transportation options more attractive/viable.	Urban and rural areas	State and regional requirement	YES. Need to evaluate how Corridor Planning can affect VMT and associated air emissions through multi-modal planning and provision of alternative transportation. Discussed during 10/26 Subcommittee Mtng
Local Land Use Tools/Policies to Improve Air Quality	Local land use regulations include a number of code provisions designed to guide development. Where and how development is affected in code varies from locality to locality. For example, includes the optimization of zoning code, design and subdivision regulations, parking requirements, planned unit development (PUD), Traditional Neighborhood Design, etc.	Densification of development while promoting diversity of uses, improved destination accessibility, reduced distance to transit, and design features that make alternative transportation options more attractive/viable.	Local Level	Voluntary	YES. Analysis of air quality impacts of local land use tools. This re-grouping was discussed during the 11/12 Subcommittee mtng. Dissemination by RAQC as best practices to improve air quality.

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Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Transit-oriented Development	Transit-oriented development encourages a mix of land uses around transit that offer multi-modal connectivity between transit and employment, retail, residential, and recreational uses. Achieving TOD requires collaboration between RTD, localities, businesses, developers, and users. (ex: Englewood’s City Center)	Densification of development around transit stops, improved destination accessibility, reduced distance to transit, and design features that make alternative transportation options more attractive/viable.	Urban and rural areas	Voluntary	<p>YES. The subcommittee believes additional analysis of potential VMT benefits of neighborhood-scale TOD linked to local bus stations (as opposed to FasTracks) is warranted because the benefits of this more localized tool have not been determined and such TOD projects are underway around the region. This will complement what we know about FasTracks- related TOD and provide a better sense of how this tool might result measurable VMT and air emissions regionally and certain localities.</p> <p>Discussed during 10/26 Subcommittee Mtng</p>
Financial/Economic Tools/Policies to Improve Air Quality	Local governments can use a variety of financial and fiscal tools to create incentives for certain types of development that will reduce VMT and trip generation and therefore improve air quality. Fiscal tools may include: Impact fees to fund alternative transportation, reduced property taxes/fees to encourage sustainable redevelopment, grants to promote sustainable redevelopment, Tax Increment Financing to subsidize sustainable development and community improvements, and Industrial Revenue Bonds to promote sustainable development. Economic development planning activities such as business incubators, innovative leasing agreements, and Business Improvement Districts can also be used to promote sustainable development.	Provide financial economic incentives to promote increased density, diversification of use, destination accessibility and design that makes alternative transportation options more attractive/viable.	Local Level	Voluntary or mandatory	<p>YES. Analysis of how employing financial and economic development incentive tools can ultimately drive air quality benefits.</p> <p>Discussed during the 11/23 Subcommittee meeting.</p>

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Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Community land trusts	Community Land Trusts (CLT) can be used to achieve different goals (preserving open space/working lands, providing affordable housing, etc). CLTs are private non-profit organizations that buy and hold land permanently, preventing market forces from causing prices to rise. For example, a CLT will separate the land ownership from the ownership of improvements (i.e. house), there are usually stipulations on how much an owner can re-sell a home for, maintaining affordability. (ex: Maple Park in Lowry)	Increase density, diversity of land use, and distance to transit.	Local or Regional	Voluntary	YES. Determine how this tool can be used to improve air quality, including researching examples from other areas that have been used in this way. Discussed during the November 23 Subcommittee Meeting
Purchase/ Transfer of Development Rights (PDR/TDR/Conservation easements)	Purchase of Development Rights (PDR) and/or Transfer of Development Rights (TDR) programs are created to promote higher densities development while reducing the development potential in rural areas. They offer financially competitive options for development (or not developing) a property. For example, with PDR, a developer may want to develop more densely, so it purchases the development rights from a property owner. That property owner can no longer develop the parcel (or as much) as allowed previously, unless it purchases development rights. (ex: Adams County TDR Program)	Increase density through targeting growth to key areas.	Local or regional level	Voluntary	YES. Detemine how this tool can be used to drive the 5 D's that can lead to decreased VMT. Discussed during November 23 Subcommittee Meeting

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Items to be Considered for Future Analysis					
Plan-Making (includes: Park/green space, Main Street/downtown, Economic Development, Neighborhood, Bike/Pedestrian, Neighborhood, Transit, Transit-Oriented Development Plans)	<p>There are a host of local plan types available to guide how the built environment and the associated infrastructure grows/changes/develops. These plans may be advanced by a planning office, or by other departments such as parks and recreational, and transportation. There are many types of plans, and the following list is not exhaustive.</p>	<p>Plans and their subsequent affect on the built environment vary, but can all influence density, diversity of use, destination accessibility, distance to transit, and design. However, it depends on the content of plans/policy and the related implementation.</p>	<p>Area specific (ex: downtown, Local Level, Regional</p>	<p>Voluntary</p>	<p>NOT AT THIS TIME: While the subcommittee recognized the importance of Plan-Making it chose not pursue further analysis on these measures with the exception of Corridor Plans. This decision was made because corridor planning offers a more direct link between land use decisions and VMT/emission and is underway in the Metro area. The other plan making tools simply don't seem to provide as promising results, given the RAQC's charge.</p> <p>Discussed during 10/26 Subcommittee Mtng</p>
State Planning Requirements (includes: Development Review, Comprehensive Planning, and Concurrency Requirements)	<p>Planning requirements mandated by state law may include requirements for cities/towns/counties/regions, etc. (ex: Oregon's Urban Growth Boundary law)</p>	<p>State Planning Requirements have the ability to influence density, diversity of use, destination accessibility, distance to transit, and design. However, it depends on the content of plans/policy and the related implementation.</p>	<p>Mandated at state level, but generally carried out at either regional or local level.</p>	<p>Mandatory</p>	<p>NOT AT THIS TIME. While the subcommittee recognizes the importance of state planning requirements, it recommends that additional analysis of these measures be tabled due to the complexity and controversy surrounding any potential effort to pass enabling state-wide planning legislation necessary for mandating such an approach Furthermore, any air quality benefits would occur well into the future.</p> <p>Discussed during 10/26 Subcommittee Mtng</p>

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Context Sensitive Solutions (CSS)	Context Sensitive Solutions is a collaborative, interdisciplinary approach to develop transportation facilities that fit the physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS was incorporated in part through SAFETEA-LU (Federal Transportation Bill). (ex: CDOT has committed to using CSS in the planning along the I-70 corridor).	CSS have the ability to make diversity of use more attractive, increase destination accessibility, distance to transit and improve design features to make alternative forms of transportation more attractive/viable.	Local, regionally, and statewide	Mandatory (under SAFETEA-LU) and Voluntary	Tool was rolled into “corridor planning” Discussed during 10/26 Subcommittee Mtng
Comprehensive Planning	Comprehensive plans (or general plans) are used by most local governments to provide a long-range vision for growth and development. Commonly, specific developments or improvements are checked against both the localities comprehensive plan and local zoning regulations. In Colorado, these are created voluntarily by localities.	Comprehensive Plans have the ability to influence density, diversity of use, destination accessibility, distance to transit, and design. However, it depends on the content of plans/policy and the related implementation.	Local level (although in some areas, regional comprehensive planning is prevalent)	Voluntary (although some states mandate comprehensive planning)	NOT AT THIS TIME. Comprehensive planning is not currently mandated under state laws, and plans vary dramatically. Subcommittee did not wish to pursue further analysis due to associated complexity, controversy similar to that stated above under state planning requirements. Furthermore, any air quality benefits would occur well into the future Discussed during 10/26 Subcommittee Mtng

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Dissemination of best practice information regarding land use regulations and air quality	Information on best practices related land use, pricing, alternative transportation can be (and currently is, by DRCOG, RAQC, DOLA, CDOT, etc) disseminated to localities to help promote land use planning that supports air quality goals.	Through the dissemination of best practices, localities/organizations have access to information on the air quality impacts of land use strategies.	Local level	Voluntary	NOT AT THIS TIME. Remove as stand alone sub-strategy, dissemination of best practices is a tool for implementing sub-strategies. Discussed at 11/12 Subcommittee Mtng.
Lending/insurance practices (ex: difficulty in obtaining loans for mixed-use development)	Currently, some lending/insurance practices create disincentives for mixed use/dense development through lending/insurance processes. For example: some lenders policies restrict financing transit oriented developments, which can provide a disincentive to developers to build these types of development.	Improve financing options to developers that build projects that promote density, diversity of use, connections to transit, and design features that make alternative transportation options more attractive/viable.	Local level (primarily through developers)	Voluntary	NOT AT THIS TIME. Removed as stand alone sub-strategy. The RAQC's influence on changing financial institution policy is limited. Discussed at 11/23 Subcommittee Mtng.
Intergovernmental Agreements for growth management	Intergovernmental Agreements (IGAs) are used as a tool for regional planning, encourage cooperation on specific developments, or along key corridors. (ex: Boulder County and Schmidt Property Public Trail Construction IGA)	Increase density through managing growth.	Local level (with regional implications)	Voluntary	TBD. Tool is considered an important implementation tool in many areas, such as Corridor Planning and Urban Growth Boundaries. Discussed during 11/23 Subcommittee Mtng

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.

Air Emission Reduction Tools	Description of Use	Desired Result	Application level	Implementation Approach ¹	Pursue for Future Analysis
Items to be Analyzed as Alternative Transportation Strategies					
Bike/Pedestrian Facilities (including bike sharing)	The provision of bike/pedestrian facilities at strategic locations can create multi-modal access and increase the use of bikes and/or walking for transportation..	To be reviewed as stand-alone alternative transportation measure.		TBD. Evaluate as alternative transportation measure. Will be furthered considered by the sub committee as it discusses alternative transportation measures. Discussed preliminarily during 10/26 Subcommittee Mtng	
Transit (light rail, commuter rail, bus, shuttle	The provision of transit can create multi-modal access and increase the use transit for transportation.	To be reviewed as stand-alone alternative transportation measure.		TBD. See above.	
Car sharing	The provision of car/bike sharing programs presents on-demand transportation options for individuals. (ex: eGo Car Share; B-Cycle)	To be reviewed as stand-alone alternative transportation measure.		TBD. See above.	
Transit station/stop planning (includes: Parking management and neighborhood access)	RTD is constantly evaluating where transit stops/stations should be sited (added, taken out). RTD assesses the need for parking and subsequent pricing for parking facilities. The provision of parking and whether it is priced impacts access to transit facilities and whether or not an individual will choose to take transit. RTD has specific guidelines for the design of its facilities. These guidelines include design, signage, safety, lighting, access, etc. These factors affect the desirability of transit as an alternative mode.	To be reviewed as stand-alone alternative transportation measure.		TBD. See above.	

¹ The measures included in this table would generally be included in baseline land use assumptions and modeling for the SIP instead of specific SIP measures.